A Dissertation On the Hydrocephalus Acutus

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By ~~Hugh G. Seymour~~
of Virginia

"In medical writings, strict veracity is above all other things required; and to this I have constantly adhered, to the best of my knowledge and judgment."

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Preface

The difficulties and embarrassments, which are necessarily associated with juvenile performances of this nature, have been so often insisted upon, and are so well known, as to require, at present, no particular notice. As it is an institute of the school, however, under whose auspices I have had the honour to commence my acquaintance with Alma Mater, that each candidate for its honours, shall prepare and defend a dissertation on some medical subject; I have collected and arranged the following remarks, on the Hydrocephalus Acutus.

Much has been said with regard to the most proper name for this disease, and authors have been no less prodigal of the denominations which they have conferred upon it. Thus we have the Apoplexia Hydrocephalica, Hydrocephalus Internus, Hydrencephalus, Hydrocephalus Acutus &c.

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After some reflection, I have thought proper to adopt, as conveying a more distinct idea of the nature of the complaint, the latter denomination. That this species of Hydrocephalus particularly appertains to the acute diseases of children, I think there can be no doubt; and as none of their complaints more imperiously demand an early attention, than it, the term appears to me to be peculiarly appropriate.

With respect to the character of the execution, I can only say, that so far as my abilities enabled me, I have endeavoured to present a clear and comprehensive view of the subject. If I have failed, I have at least the satisfaction to know, that my intentions have been pure; and that I have always had before me the noblest incitements to exertion which can animate a young and inexperienced mind.

Presuming, therefore upon the clemency of those, into whose hands this hasty production may fall, I console myself with the reflection, that their decision on its aptitude for the purpose intended, will not depend so much upon its real merits, as the consideration, that the author is but a mere tyro in science.

"This is a pitiable case, in which the most tender feelings, the soundest judgment, and the utmost sagacity of the physician will find a call, and a task sufficient to exercise and display themselves: but, alas! I fear the physician is seldom sent for till the opportunity may be lost."

Dawson.

A
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Hydrocephalus Acutus

Of all the diseases to which children are exposed, perhaps there is not one which more deservedly claims, or is better entitled to the attentive consideration of the Physician, than the Hydrocephalus Acutus. The justness of this remark will be particularly apparent, when we recollect, that this "hydra" assails one of the most delicate and important organs of the body, and that its attack is sometimes very sudden, and soon proves fatal. In other cases, the approach of the disease is insiditious, its progress deliberate, and when without the interference of art, it is permitted to advance, untill effusion takes place within the brain, its fatal termination is almost unavoidable.

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History of the Disease

The antecedent symptoms of Hydrocephalus, are in many cases inconsiderable, and apparently so unimportant, that they are often either wholly disregarded, or considered as the simulations which children design to keep them from school. In the beginning of this disorder, and sometime previous to the appearance of any confirmed complaint, the child loses much of its ordinary sprightliness, and becomes, daily, more dull, languid and drowsy, being averse to motion, and complaining of slight pains in the head and belly. Even at this early period of the complaint, the stomach and bowels are often considerably disordered, the appetite is generally impaired, though sometimes morbidly increased, and troublesome paroxysms of nausea and vomiting aggravate the symptoms. As the evening approaches, a slight fever supervenes, and the child's sleep is interrupted by uneasy dreams and startings. The headache, which at this time is seated in the forehead, is very severe, and causes much complaint. Light disturbs the patient, the eyes soon become fatigued, and the pupils are at different times, more or less contracted. Acute pains are complained of, in several parts of the

* Vid. Cheyne on Hydrocephalus Acutus.

* Fothergill. Quinsy.

body, now attacking with much violence the nape of the neck, then the bowels, and, finally, the extremities. Most commonly the bowels are costive, and the tongue is white; sometimes, however, an opposite condition prevails: the stools which in the commencement are clayey, change in the progress of the disease to the consistence of jelly, take on a dark green colour, and emit an offensive odour.* The vomiting which is so frequent and troublesome an attendant on the complaint, occurs chiefly in the morning upon the patient's arising from bed. The symptoms which have been detailed, are like the lines of the camelion, very changeable, scarcely ever happening twice, exactly in the same order, and after having lasted a short time, become somewhat more determined and characteristick.

The fever which at first was slight, now increases, and sometime in the course of the day, generally towards evening, undergoes an exacerbation, during which the respiration is hurried, the skin is hot, the cheeks are flushed, the pulse which in the beginning was nearly natural, becomes frequent, and the headache is more violent and alternates with the vomiting.* The child rarely, or never

* Tchorquit.

Quinn.

sleeps profoundly; but has short and interrupted slumbers, during which, it starts, picks its nose, and grinds its teeth. It dislikes to be disturbed, and manifests a disposition to remain constantly in the recumbent posture; stupor succeeds, and so great is the insensibility, that the stools and urine sometimes pass involuntarily, the former of which are of a dark colour from a commixture with bile, and particularly offensive. The pupils of the eyes are much dilated, and strabismus or squinting may now be observed. The child moans a great deal, frequently raises the hands to its heads, and sometimes screams loudly without complaining of any particular part. The head is generally very hot, from which a profuse perspiration occasionally flows. The superficial veins which ramify through the scalp, are in some instances considerably distended with blood, and not unfrequently epistaxis, or a hemorrhage from the nose takes place, with little alleviation of the symptoms.†

When the disease has gone on in this way for some time, the complexion becomes sallow, the patient is considerably emaciated, its head is so heavy, that it seems

bid Chevne

scarce able to support life, and such is the languor and dejection of the countenance, that those most concerned in the case are ready to despair of a recovery.

The attack is sometimes more sudden and violent, the child being immediately seized with a considerable fever, which continues with little abatement throughout the first stage. This is particularly the case where the previous health of the patient is defective, either in consequence of an antecedent scrophulous affection, which has lately subsided; or of some epidemic disease with which the child has before been afflicted, and from which its health has not been perfectly restored.* Through the whole course of the disease, there is the most manifest evidence of congestion in the system. At one time, the child is worse and restless, heavy the cough and troublesome, nurses the sick, shows the anxious countenance, and the hurried laborious breathing: at another, the circulation loosing its irregularity, becomes almost natural, the skin is moist and of the proper temperature, the complexion is warm and the respiration easy and undisturbed. The desire for both food and drink is irregular, the appetite being sometimes nearly

* Dr. Irvine.

natural, and the patient makes no complaint of thirst; in others the stomach is so weak that for several days serious nourishment is taken; there is great thirst and vomiting, the urine is scanty, and the bowels are constantly varying from the natural condition, sometimes discharging with much, green, mucous stools; and at times so obstinately costive as to require the use of the strongest purges. The fever frequently abates, but is never entirely absent, and is sometimes attended by such acute pains in the head that the child becomes delirious, at first raving, then it is seized with convulsive twitches of the faces, and now and then the limbs are affected with the irregular motions termed St. Vitus's Dance. When death, unrelieved by the stat. in the brain and sensibility of the system have been abbreviated by authors to Hydrocephalus, at which period frequently, we find are liable to some variations. The first stage is known by the infant's being much, irritable, and in many instances having that peculiarity that for a few minutes it is very sleepy, not amounting to more than 50 or 60 in the minute, and during the next short interval of time it becomes so frequent as to exceed 100.* There is much pain in

* Wid. Cheyne.

the nose; the eyes are suffused, and the pupils closely contracted; discovering a dislike to the light; there is a blush on the face which is attended by a hot dry skin, white tongue, and in general by most of the symptoms which indicate an increased sensibility of the system. In the second, the pulse is slow, still irregular and intermits; the pain in the head together with the febrile heat undergo a temporary abatement; the child is sluggish and difficultly excited to motion, seeming only anxious for quiet and repose; the pupils are much dilated, which is accompanied by strabismus; and when the eyes are not absolutely insensible to the light, their axes deviate so much from the natural direction, and vision is thus rendered so imperfect, that objects present a double surface; the bowels are so resolutely constipated that the most active cathartics are unavailingly employed; in short, such is the deficiency in the actions of the system, that this has been very improperly called the stage of decreased sensibility. What has been denominated the third stage, may, perhaps with more propriety, be considered as a relapse or continuance of the second. Let this, however, be determined as it may, it is consequently a suspension in the

complaints that afford the least chance for a veritable alleviation of art, and a hazardous tense at which the most sanguine hopes of success are frequently embarrassed by the extreme violence of disease. It is in this stage, that the pulse becomes small, weak, and the strokes follow each other in such rapid succession that, it is with the utmost difficulty, they can be numbered; the face presents frequently, but lamentable, disorders; and after their recess, a gloomy wariness overshadows the countenance, the breath is feeble, or offensive, there is great difficulty of breathing, which bears a strong resemblance to the stertor apoplectica; hemiplegia sometimes takes place which is followed by other convulsions and death.

Having now described the symptoms which appertain to the attack, as well as the characteristick of the different stages, it may not be amiss to observe, that this truly protean disease rarely pursues exactly the same course, but presents in every instance symptoms, varying according to the circumstances of the case. Those who are conversant with it, must have frequently remarked the surprising fluctuation of the symptoms, and cannot fail to be sensible that every attempt

to convey in correct language its precise history, cannot be otherwise than unsuccessful. To attain such desirable accuracy, each case would require its own individual history. In most instances however many of the above mentioned symptoms appear, and though it may be somewhat troublesome to distinguish the complaints in the commencement there is little difficulty in the latter, terrified "Insania" says Dr Thayne "how can we mistake, when we see a child rolling his head on the pillow, or perhaps tearing the air with one hand, while the opposite side is paralysed; with a hectic on the cheek, his eyelids half covering the pupils, and the eye retained by the fixing, occasion of the cornea, the complete dilatation of one or both of the pupils, and the suspension of the mamillary; drawing a long sigh; recovering, opening his lids; quite insensible, as in a state of complete insensibility: with a burning fever on his skin, or sweat, breaking from every pore; and all these symptoms alternating with, and at last finished by stertorous breathing, and violent convulsions." If the disease be true, according as advances age, are liable to the attacks of Hydrocephalus; the infant,

nervous is destined most precisely to become the subject of its ravages. And this we might be led to expect, as the brain at this time of life is larger in proportion to the other parts of the brain, than in the adult subject: consequently, whenever the energies of the system are much increased, a preternatural determination of blood to the brain takes place, patronized in this manner. The cephalic inflammation which terminates by serous effusion into the ventricles. Hydrocephalus is properly a primary affection, and many writers have assumed where several children of the same family have died from it. Dr Underwood mentions an instance of this kind, in which six children when two years old were first incapacitated, destroyed; and Dr Clarke has recorded one still more deplorable, where the disease ultimated "an unfortunate father of eleven hopeless children. From this statement it will clearly appear, of what great moment it is, to bestow a strict attention on the precautionary or preventive treatment, by which its alarming fatality may in a great measure be obviated; but of this we shall say more hereafter. This disease is frequently met with in children

* Burns.

having a scrophulous disposition, which may explain why the offspring of some parents are more exposed to it than others; as it is highly probable they inherit the strumous taint, and with it the tendency to the disease, from their ancestors. It is also a curious fact, that most of the children who have been afflicted, and died of this disease, were remarkable for the acuteness of their intellectual powers, displaying an aptness in conversation much above their years and Dr Fothergill remarks, "that several of those who first of all came under his care in this disease, were either the favourites of the family, or the sole hopes of their parents." Hydrocephalus is not confined to any particular season of the year, occasionally happening in all of them, though, perhaps most frequently in spring and summer. The length of time which it occupies is not very regular. Sometimes only a few days are consumed by it, while at others it protracts its continuance for several weeks. Most generally however, if the patient has reached the second or third year of age, twenty or thirty days terminates it; but if the child be very young, it is of a much more limited duration, frequently abridging its course to the short period of four or five days.*

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Diagnosis

As it is desirable to distinguish Hydrocephalus from some other diseases to which it bears a resemblance, I shall next make a few remarks on each of the complaints, with which it is most likely to be confounded. The diseases to which particular allusion is had, are the worm fever, the infantile remittent fever, and the symptomatic Hydrocephalus, or the symptoms which arise, when the brain morbidly sympathises with disordered chylopoietic viscera.

From worms. It is not very easy to represent sense, by which our disease may be always distinguished from worm cases: for many of its early symptoms are precisely similar to those arising from worms, and the difficulty is increased by both of them being complaints of the same age. When, however, there is a continual headache, with a disposition to lie on the back, and an inaptitude of enduring the light, attended by nausea, and acute pains in the extremities, together with glassy, bilious, and offensive stools, or an almost incorrigible constipation of the bowels, it is highly probable that Hydrocephalus has either already commenced, or will soon take place. Many of the characteristic symptoms which have

* Hothorgill.

† Vide. Elements of Materia Medica - Therapeutics, by Dr Chapman.

been mentioned, do also, undoubtedly occur in the vermi-
ose complaints; but they are more transient, and in general
not so severe, neither do they so obstinately resist our efforts
to redress them. In particular, the costiveness from worms is
much more easily corrected, and the stools are slimy, rath-
er than glossy; spasms also are oftener met with in disor-
ders dependant upon worms, than in the disease under con-
sideration. The symptoms, however, which most of all, ought
to be depended on, and which more distinctly afford tum
to the case of worms, are, "a very strange alteration of voice,
and in some instances, a total loss of speech."

Dr Chapman

From Remittent Fever. A particular attention to the symptoms
of Hydrocephalus, as well as those of the Infantile Remittent Fever,
will generally enable us to distinguish these diseases. By consid-
ering the cautious commencement, the frequent vomiting,
and the irregular remissions of the former; with the sudden
attack, the more complete remissions, and the greater liveli-
ness of the child during their continuance, in the latter
complaint, we shall be much assisted in our diagnosis. In
both complaints, there is pain in the head, but in the Rem-
ittent Fever, it is in paroxysms, which are confined to

*. Hothergill, Burns.

the early stage of the disease, and are generally accompanied by nausea, and disorder of the stomach. In the Remittent Fever, the stools are more offensive, and darker coloured than in Hydrocephalus, in which, they are frequently of a glassy, bilious aspect, and liquid consistence. It is not however to be denied that there is in certain cases a troublesome confusion of the symptoms, which much embarrasses the diagnosis, and almost denies the possibility of an accurate distinction.

From Symptomatic Hydrocephalus. It has been very truly observed by Dr Millar, that we should distinguish the complaints under consideration, from the Symptomatic Hydrocephalus, an affection dependant on an unhealthy condition of some of the abdominal viscera, of which, the brain by morbid association frequently participates; exhibiting a series of symptoms very similar to those of the idiopathic disease. Such morbid sympathy is most frequently kept up, between the brain and the alimentary canal, and to these organs we shall particularly confine our attention. This becomes necessary, not only with a view of settling the diagnosis; but also to point out the proper method of

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manifest, which the ventricles of the cerebrum are for "most commonly at least." Dr. Coleman "the disease" referred to Hydrocephalus "does not arise as an accumulation of water in the ventricles of the brain, but consists in an altered state of that organ, arising from a morbid derangement in the chylopoietic viscera, and particularly of the stomach." Many of the diseases of children, indubitably depend on obstinate constipation of the bowels, and the symptoms proceeding from such a condition of these organs, from their striking resemblance to those of Hydrocephalus, must have often awakened the apprehensions, and brought into action the most vigorous medical exertions to subdue them. It is mentioned, indeed, by an author of no small degree of respectability, that he has with great pleasure, known children recover from the most alarming and desperate situations, when from the manifest similitude of the symptoms to those of Hydrocephalus, there was the most obvious arguments for concluding that disease to exist, until the result of the case proved the contrary. It is well known to those experienced in infantile diseases, that there frequently exists between the Marasmus

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and Hydrocephalus an intimate association, and it is my deliberate conviction, that the latter complaint is often completely and irremediably established in the intractable obstipation of the bowels which not unfrequently attends or produces marasmus. If this observation proves true, and there is little doubt but a more enlarged experience will confirm its correctness, I cannot be too importunate in soliciting the attention, not only of physicians but also of parents, to the condition of these important organs in those children who may be intrusted to their care; and whose health it should be their object, as much as it is their duty, constantly to improve.

There is, undeniably, a strong resemblance between the symptomatic and idiopathic Hydrocephalus. But it will be found that the symptomatic disease generally amends, or ceases entirely, whenever the untoward state of the bowels has been corrected by a suitable application to cathartics. Whereas, the idiopathic complaint contumaciously resists for a considerable time, the best directed plans of treatment, and I am sorry to say that its fell career is too often never arrested until the patient is consigned to

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the cold hands of death. A short course of gentle purging, timely resorted to, is, most generally, competent to prevent or cure an indisposition which if allowed to progress will become an exceedingly intractable distemper, that frequently proves fatal.

While upon this subject, I cannot feel satisfied without noticing the absolute importance of strictly attending to the early symptoms, the harbingers of this mischievous complaint. I am solicitous to excite an attentive observation at this period of the disease for various reasons, some of which I will take the liberty, briefly, to mention. It is necessary, in the first place from the negligence of children, in regard to their complaints: for they rarely, until completely bereaved, inform us of them. In very young infants the difficulty is increased, and the plaintive cries of the child are the first signs to apprize us of its indisposition. But, of the nature of its complaints, we must endeavour to form an accurate opinion by carefully examining the alvine discharges, and by a watchful attention to the countenance, the features of which assume different expressions, according to the various kinds and degrees

of jaw. These discriminating modifications in the lineaments of the face, are important auxiliaries, at least in infants, in enabling us with more clearness of judgment to decide on the character of their complaints, and with more certainty of success to adapt our remedies to their respective peculiarities. It is further an object of great consequence early, to detect the nature and tendency of the complaint. The advantage which is thereby obtained in the treatment, is adequate fully to compensate for all the trouble we may encounter in instituting the proper inquiries for such a purpose. Every one will be sufficiently convinced of the benefit which arises, from forming, soon after the first symptoms appear, a correct opinion of the disease, when they carefully contemplate that many of the symptoms of Hydrocephalus, are not only of an ambiguous nature, but equally belong to other complaints. If we even admit that those who are familiar with the disorder, encounter, comparatively little difficulty in distinguishing it: yet the united observations of practitioners, are sufficient to teach us, that other causes produce similar symptoms, which may, without the most accurate

investigation, and aslindness of conclusion expose us to the commission of errors, for which the most poignant remorse can never atone. The most important reason, for dwelling a seasonable and vigilant attention to the sorerunners of the disease, remains yet to be considered. It is the great influence, which a judicious mode of treatment commenced at this early period, has upon the result of the case. For though in most other diseases, we may, by a prudent and skilful application of remedies, frequently be successful in the cure, at any stage; yet, humiliating experience instructs us, that it is only in the early periods of Hydrocephalus, and before effusion has taken place within the ventricles, that our remedies have much chance of success.

Causes

Hydrocephalus sometimes takes place, without our being able to trace it to any satisfactory cause. More frequently, however, a particular examination, with regard to the constitution, and the previous health of the patient, as well as the accidents to which it may have

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been unnecessarily exposed, will discover some one of the following causes

1. External violence. Certain injuries done to the head as blows, and bruises, often produce this disease. The manner in which such accidents operate, when they become causes of Hydrocephalus, is not very obvious, and when this fact, two very ingenious gentlemen, both of whom have treated of the disease, materially differ. The late distinguished Dr Rush, supposed them to act, "directly, by inducing an congestion, or inflammation, and afterwards an effusion of water in the brain." Whereas, Dr Gregne, who has elaborately written on the complaint, avers that in more than one hundred cases, which have come under his observation, he saw not one instance of the disease, directly occasioned by external violence, and only one where it was indirectly produced by the same cause. He contends that these injuries, act intermediately, by induced an asthenic state, or by exciting into action a scrophulous condition of the system, which hitherto had been latent, and which when aroused, is very favourable to the establishment of Hydrocephalus. This apparent contradiction will

perhaps evident of exhaustion, by adhering, what was=
it, seems highly probable: that the systems of the patients
to whom the above accounts happened, were not at the
time of the injuries, in similar conditions. For it is suf=
ficiently obvious, that a certain cause operating upon a
peculiar state or condition of the system, may in the one
case produce a harmless effect; whereas, the event shall
be contrary in another patient, whose system is differently
circumstanced, and exposed to the same cause. What these
states exactly are, I am not prepared to determine; but
it is an incontrovertible fact, that some patients when
subjected to such violence are more liable to take on in=
flammation than the asthenic state, and vice versa.

2. Fevers. Among the causes of this disease, may be men=
tioned the various kinds of fevers; as the intermittent, re=
mittent, and continued fevers. That Hydrocephalus some=
times succeeds these diseases, there is not the least doubt, and
to this point we have the testimony of several authors. Af=
ter having pursued their ordinary course, fevers frequently
leave the system in a condition, highly favourable to the
production of a new disease. For while they exist to

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a considerable extent, the circulation is very much excited, and if the brain be naturally weak, or have been enfeebled by previous disease, it is highly reasonable to suppose, that the blood would be determined thither, in quantities so preternatural, as to impede its natural functions, and thus lay the foundation for the disease.

3. Exanthematous fevers. Many instances could be cited where Hydrocephalus has occurred as the sequel of the measles, small-pox, and scarlatina. A case is mentioned by Dr. J. Hunter, in which the disease succeeded the small pox, and which was successfully treated by the mercurial plan, as recommended by Dr. Dobson. Dr. Rush, also, has recorded a case, in which the debility of the system occasioned by an attack of the measles, manifestly gave rise to the disease; and Dr. Adair has witnessed four cases, where it occurred after the small-pox, measles, and scarlatina.

4. Rheumatism. Cases of Hydrocephalus, have sometimes high been given to this cause. I am disposed to believe however, that in such instances, the rheumatism is intimately blended with a scrofulous disposition, and that this indeed is more generally, the true cause of the complaint.

5th Worms. The similarity which prevails, in most instances between the signs of worms, and the Hydrocephalus, has doubtless, not unfrequently deceived inaccurate observers into hasty and false conclusions. That the complaint, however, sometimes arises from this cause, I am induced to believe; not only upon the authority of writers, but likewise from an interesting case, which has lately happened under my own notice; where worms were unquestionably the cause, and which notwithstanding the diligent use of the most potent remedies, terminated fatally.

6th Chronick Eruptions, suddenly healed, have sometimes produced Hydrocephalus. No attempts should be made to cure such affections, without previously establishing an issue or a seton.

7th Various other complaints, have been mentioned as causes of Hydrocephalus, among which, are the colic, palsy, melancholy, dysentery, dentition and insolation.

Proximate Cause.

Diversified, as have been the speculations of the earlier writers, on this very intricate and interesting part of

our subject, none of them appear to be entirely satisfactory, or sufficient to illustrate the perplexities of the case. By consulting the works of Fr. Hall, Rochoux and Darwin, we shall be reminded that the hydrocephalic views of the compound, with which they were pleased to favour us, have rather originated from their imagination, to elucidate so obscure a matter, than any accurate knowledge which they enjoyed of the real nature of the disorder. Thus Dr. Hall the disease was imputed to an "original weakness, or laxity of the brain," and also to "a too thin and watery state of the blood". Rochoux considered it as "a dropsy occasioned by the rupture of a lymphatic," and "a debility of the absorbents" was assumed by Darwin as an adequate cause to account for the water which is found in the brains of patients who have died of Hydrocephalus.

From the recital of these observations, it is very evident that the promulgators of them, implicitly the disease to be a dropsy, occurring as the immediate effect of the several causes assigned, and that the effusion thus produced within the brain gives rise to the various symptoms which are presented in the course of the disease. Since

Fig. Circumscribe

the time, however of these illustrious and venerable cultivators of sciences, we have been taught, by ample experiences, as well as repeated dissections, that the disease is not, in reality a dropsy, but as subsequently has been shown by Drs Dunn and Cheyne, consists in a primitive disorder of the cerebral circulation; admitting a morbid accumulation of blood to take place within the brain, from which most of the symptoms proceed. According to our present knowledge of the subject, the pathology of Hydrocephalus may be thus stated. That this disease depends upon a morbid redundancy of blood in the venal circulation of the brain, which is occasioned by some degree of previous inflammation, and in a majority of cases, causes sometime before death, a greater or less quantity of lymph to be effused into the ventricles.

In support of this opinion of the proximate cause of Hydrocephalus, I shall present a few considerations. In the first place, we may remark, that in a majority of cases of the disease, in which blood has been detracted at an early period, it has almost uniformly exhibited the same morbid appearances, which are peculiar to this fluid

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in diseases of an inflammatory type. The excitement of the pulse, and the exceedingly acute and distressing pain in the head, which generally attends in the early periods of the disorder, must, also, be looked upon as evidences strongly concurring in favour of this view. The bleeding from the nose, and the turgidity of the superficial veins about the head and neck, together with the mitigation of the pain and other symptoms, which constantly accompanies the use of the lancet, and other antiphlogistic measures in the early stage of the complaint, are corroborating testimony which cannot well be controverted. Another proof which is exceedingly favourable to this supposition, and which indeed ought to be considered as conclusive evidence, is the manifest deterioration of the symptoms which always follow the administration of exciting or stimulant medicines in the first or inflammatory stage. When to all this, are added the diseased appearances which dissections have revealed, certainly, no one can hesitate to admit the correctness of our pathology; for it seems indeed to be the obvious dictate of nature, reason, and experience. Are we not, from all these

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reflexions, justly entitled to come to this determination? That the symptoms of this disease, do not as formerly supposed, arise from the presence of a preternatural quantity of fluid in the ventricles of the brain; but from a particular kind of cerebral inflammation, which produces a morbid secretion in the venal circulation of this organ; and that the excessive, the hitherto assumed cause, is absolutely the natural effect of the peculiar morbid action constituting hydrocephalus.

Prognosis

However desirable, or satisfactory, it may be, in many cases, to predict the events of diseases, it is a privilege which unfortunately, we do not always enjoy. In the complaint now treated of, it is particularly necessary, that the prognosis should be extremely cautious and deliberate. So singular, indeed, is the nature of this disorder, that restoration has been known to take place under circumstances, apparently, the most unfavourable. Thus, Dr Millar speaks of a patient, "who recovered after being abandoned to his fate." And Dr Batson mentioning the restoration

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of a boy, in whose case, with the exception of a blister, all the remedies used were of little efficacy, remarks, that "it may sometimes happen, as in the present instance, that nature although but moderately assisted, will enable the sick to struggle through diseases beyond our most sanguine expectations." In forming the prognosis, attention should be paid to the following circumstances. It may be mentioned, in the first place, that when Hydrocephalus attacks children, whose constitutions are previously sound and healthy, is early detected, and the appropriate remedies had recourse to immediately upon the occurrence of the first symptoms, the chance of cure is less doubtful than under the opposite circumstances. According to Dr. Cheyne Hydrocephalus is more easily cured, when a family complaint, than otherwise. The return of the mucous secretion from the nose, which in this disease is frequently suppressed, has been supposed to be a favourable sign. But what is more propitious than all, and which perhaps ought to be regarded as the only auspicious token, is the complete cessation of the stupor, or comatose state. On the contrary, when a naturally defective constitution, or a system subdued

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by incurable complaints is opinion by Hippocrates, the prognosis is extremely unfavourable. If permitted to advance until symptoms indicating an effusion of serum within the brain, disclose themselves, the disease generally terminates in death. At the same time it ought to be mentioned that cases have happened, from which, notwithstanding the occurrence of such symptoms the patients did recover. Plentiful discharges of urine, with copious and partial perspirations, taking place in the latter stages of the disease most commonly, forebode death. It should not be omitted, however, that the reverse of this is sometimes true. Thus, a case is mentioned by Dr. Cheyne, where from the insensible and seemingly moribund state of the patient, a successful termination was entirely despaired of; but at the very threshold of death, a profuse sweating took place from the head and neck, which was so great as to make it necessary to change the pillows, and from that instant, the child began obviously to revive, and completely recovered. When unhappily, the assistance of art is not solicited until the latter periods of the complaint, little hope

* Leiner.

of a cure can be entertained. How, indeed, can we expect success, at this advanced stage of its tragical career? It is now, that the most dangerous and alarming symptoms are presented, such as great coma, blindness, insensibility — involuntary discharges of the urine and faeces, weak and rapid pulse, hurried breathing, and as the tragedy concludes, hiccough appears, and convulsions close the scene.

Prophylaxis.

In a disease of such inexamplex contumacy, and deplorable mortality, as the one which I am describing, precautionary, or preventive measures, cannot be too highly recommended, or strenuously urged. From what has been already said, it must be obvious, that incomparably greater dependance, may be placed upon this part of the treatment, than the most skilful use of remedies, after the disease is completely established.* As in many cases, this complaint has been preceded by a disordered state of the bowels, it is highly necessary, whenever these viscera are affected,

to have immediate recourse to a dose of mild cathartics, which we may repeat, occasionally, untill a restoration is effected. That a healthy condition of the digestive apparatus, is a matter of essential importance to the due exercise of all the functions of the body, is a fact, which I believe no one will deny, and which indeed, experience daily suggests to the wisdom of every practitioner. From the intimate sympathy, which prevails between the brain, and the chylopoietic viscera, it is very apparent, that if a diseased state of these organs, is permitted long to continue, the brain will at length partake of their morbid situation, and having its functions thereby, impaired, will by reflex sympathy, react upon the parts, from which the impression was first extended, and occasion in them an additional, and much more dangerous disorder. After what has now been said, it is only necessary to observe, that the longer the proper treatment is omitted, so much the more alarming becomes the affection of the bowels, and instead of derangement in one portion only, the irritation is extended through the medium of association, untill

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the whole is involved, and a catenation of morbid sympathies is thus constituted, which often bids defiance to the most powerful and efficient resources of our art. Whenever there exists a predisposition to the complaint, as is frequently the case, the preventive measures must be adapted to the constitution, and particular circumstances of the patient. Thus, if the child be of a plethoric habit, all heating and stimulating articles, both of food and drink should be carefully avoided. A spare diet must be incumbent. The daily use of exercise, judiciously regulated, together with gentle purging, will be found highly beneficial. If the child is subject to frequent pains in the head, which cannot be attributed to some other cause, our suspicions should be excited, lest it may arise from an oppressed state of the cerebral circulation, and in addition to the preceding remedies, it will be requisite to place an issue in the arm, or a seton in the back of the neck. These measures proving inadequate, the head ought to be shaved, and a blister applied to the scalp, which is to be kept discharging until relief is obtained. It is mentioned by Dr. Quin, that

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he has known several instances of children having a family right to the disease, who were subject to frequent hemorrhages from the nose; and that he has considered it proper in those cases, to forbid the use of any measures which might interfere with such bleedings. Like Dr Dunn, I should much fear to check these hemorrhages, if I did not design, at once to resort to such means as would render their continuance unnecessary. But it appears to me, that the occurrence of such an event, serves indubitably to show, the existence of either general or local plethora, and the consequent necessity of general or local bleeding, which intention, I should rather prefer to accomplish by means of art, than leave the process to the tardy, and often ineffectual operation of nature.

When from a defective constitution, or acquired debility, there is reason to apprehend the occurrence of the complaint, it will be prudent to employ means calculated to invigorate the system, and restore the health; and as Mr Dunn has well remarked, "we had better be blamed for using remedies too early, than have to regret that we employed them too late."

Method of Cure.

If, notwithstanding the most judiciously regulated prophylaxis, this "insidious destroyer" prevails; or when we sometimes behold the disease unexpectedly assail the unfortunate child, we are bound by an inviolable duty, both to the profession, and our patient, immediately and vigorously to "oppose" the inauspicious progress of so hostile an invader. Since in the commencement of the disease, symptoms frequently occur, indicative of a disordered condition of the stomach, there can be no doubt of the propriety of having recourse to a gentle emetic, which will disburden the stomach of its "offending" contents, and prepare it for the reception of subsequent remedies. But in this, as in every other disease, we must be governed very much by the particular circumstances of the case. Thus should the obstinate costiveness of the bowels, which usually attends the complaint be "the most prominent symptom, no one would hesitate to apply to cathartics, and persevere in their use, until the healthy functions of the alimentary canal are restored. If by these remedies, the early

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symptoms have not been arrested, but continue to advance, they soon recover to us by their increased violence, and more definite character, the malignant nature of the distemper, with which we have to contend.

Our pathology supposes a preternatural accumulation of blood in the brain. Accordingly, the first and most obvious indication of cure is, to remove from that highly vital part, by every judicious means in our power, this morbid redundancy.

Blood-Letting. Of all the remedies for such a purpose, blood-letting is the most speedy, practicable, and effectual, and in the commencement of the complaints, either general or topical bleeding, seems always to be required. In many instances, it will be found advantageous to detract blood from the arm, the quantity of which, is to be regulated by the age of the patients, the violence of the attack, and the previous state of the system. I very well know, that some of the writers on Hydrocephalus, entertain not, a very favourable opinion of general bleeding in it, and allege, that the great debility which a continuance of the complaints always occasions, is a sufficient argument,

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for withholding the lancet. But this, so far from deterring us from the use of venesection, is in my opinion one of the strongest proofs in its favour, and serves, indisputably, to point out the great utility of such a measure. The primary object in the application of remedies is, certainly to subdue diseases as speedily, and effectually, as its obstinacy, and the measures employed will admit. For the longer a disease is permitted to endure, so much the more dangerous will be the weakness, and the chance of cure proportionably precarious. Of the two consequences it really do conceive, that it is most judicious, when we have the privilege of a choice, to prefer that which follows a skilful adaptation of remedies. In both cases, there would unquestionably be weakness, but that arising from the treatment is simple, and easily obviated. Whereas, the debility brought on by a protracted complaint, is frequently complicated with dangerous affections of the viscera, and is almost always accompanied by a train of evils, which challenge the best concerted plans of ingenuity and experience.

Blood-letting has been very hastily condemned in the diseases of children, and this is the more remarkable, as in

many cases, there is not in the whole circle of medical expedients, a suitable equivalent. So far, in my opinion, is this from correct doctrine, that in the acute diseases of children, I believe there is no remedy which may not, less dangerously be dispensed with than bleeding; and none without which they prove more intractable. Children are wonderfully tenacious of life, and whenever confirmed the fact, that in inflammatory diseases, they are better able to sustain copious bleedings, than any other order of patients. Indeed, they so soon subtile the loss of fluids, that in many cases, one bleeding will be insufficient for the purpose of cure, and it is frequently necessary to repeat the operation. The foregoing remarks are by no means intended to countenance a rash and indiscriminate use of the lancet; On the contrary, the only object I have in view is to place in a true light the great advantage of the remedy, when judiciously employed.

When children who have infirm constitutions, are attacked, or where the disease supervenes to great debility, induced by previous complaints, then general bleeding would be, manifestly, improper, and prejudicial. Here

local bleeding from the head, by means of leeches and cups, is of immense service. By thus detracting blood from the affected part, we avail ourselves of all the advantages of the remedy, without much increasing the debility of the general system. It is not, however, to be understood, that cupping and leeching are intended to be restricted to the cases just noticed. On the contrary, topical detraction is of essential moment in all cases, and to omit it under any, save extreme, would be the height of imprudence. In some cases, indeed, the morbid congestion of blood, in the cerebral circulation, appears to be so immoveably fixed, by the diseased action in the extreme vessels, that the most plentiful general bleeding, is entirely incompetent to remove it, and it becomes necessary to evacuate obviously from the head. This may be done, in conjunction with the means already spoken of, by opening the temporal artery, or jugular vein.

In all cases where there exists general arterial excitement, it is very evident that bleeding from the arm should precede local detraction. If this arterial irritability is carelessly disregarded, and topical bleeding

* This operation is mentioned by Morgagni, who says it may be used, with much advantage, in all cases, where the brain is obstructed with too much blood.

Vide Works, Book I. Epistle II. Article 10.

alone, resorted to; it is sufficiently obvious that such a condition of the arteries would cause the blood to be propelled with increased violence to the brain, and the remedy would thus tend to aggravate the evil, which it was designed to redress. If the means of local depletion already noticed should from any circumstance, prove inadequate to our purpose, it will be expedient to open the occipital veins.*

Purgatives. In the treatment of this complaint, cathartics have been highly, and most deservedly recommended. The intestinal canal, in this complaint, is liable to great irregularity; sometimes, its functions are so exceedingly perverted, that it allows a morbid collection of indurated fæces, which are difficultly removed by the strongest purges. In other cases, the bowels are persistent, and the discharges are thin, heteraceous, and remarkably offensive. Most commonly, in both, the intestinal, as well as the hepatic secretions are considerably disordered, being either deficient in quantity, or of a quality, exceedingly depraved and unnatural. Under these circumstances, extensive experience, confirms the utility of a purgative course, which ought to be

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unremittingly continued, until a healthy appearance is restored to the evacuations. Independently of their effects in correcting the morbid secretions, and awakening the dormant powers of the alimentary canal; cathartics prove eminently serviceable by the copious evacuation of fluids which they occasion from the gut. Nor need there be any fear of increasing, by this important measure, the debility of the system: for it is a fact altogether worthy of notice, that a continuance of this disordered condition of the intestinal functions, is infinitely more productive of injurious effects, than the purgative plan. The remedy inactive, so far from adding to the weakness which the disease produces, is almost universally followed by the most manifest salutary consequences. In the very commencement of this complaint, a course of cathartics, might in many cases, be employed with the highest advantage. For it is obvious, that an impression thus excited, and kept up in the alimentary canal, would, by diverting the circulation from the brain, powerfully counteract the mischief, so rudely offered to that delicate and helpless organ. Cathartics, cannot be too highly commended, in

* Dr Lawson.

those cases of the symptomatic Hydrocephalus, originating in a derangement of the digestive organs. Here, they display a pre-eminence, which justly entitles them to a high rank in the catalogue of remedies for the complaint; and it is in this case that they have often happily dispelled a train of symptoms, which from their dangerous and menacing aspects, have excited the most alarming apprehensions for the fate of the patient.

Blisters. The great relief which blisters afford in most cases of local inflammation, is amply sufficient to recommend them to our notice in the disease under consideration. In the early stages of the complaint, after the vascular action has been reduced by bleeding, and the other depletory measures; a large blister applied to the scalp, has in many instances effected a most comfortable mitigation of the tormenting headache, which so continually harasses the patient. The utility of blisters in this disease, seems to have been well known a considerable time past; for a very ingenious author who, fifty years ago, wrote on Hydrocephalus, observes, "That though cantharides impress a painful sensation on the skin, and urinary

* Ibid. Clarke on the diseases of children.

passages, nevertheless the extraordinary relief they display, in some diseases, may be owing for aught we can tell, to a kind of titillation, or some unknown operation on invisible fibrillæ, unexplored canals, and on fluids not yet dignified with a name: Who can ascertain or limit the variety or extent of their powers? However liable to objection, this view of the modus operandi of blisters may be, it will not be denied that they constitute an exceedingly valuable means, in subduing some of the more violent and dubious symptoms which are incident in the first stages of the complaint. Their mode of operation is to be explained upon the principle of revulsion. In consequence of the peculiar inflammation which they excite externally, the perverted action, existing within the brain is invited to this new source of irritation, and in some degree appears to be supplanted by it.

Notwithstanding the weight of authority, in favour of the application of blisters to the head, in this disease, their utility is positively denied by a very ingenuous and respectable writer: who declares, that "in a number of the cases of the complaint, which have come under

his cases, he has employed the blister to the scalp, and invariably without success. This fact, so contrary to the observation of most practitioners, Dr Clarke explains in the following manner. He says, "that when blisters are applied to the scalp in inflammation of the brain; a new inflammation is excited on a surface, supplied from the same general trunk (proceeding from the aorta) as the brain itself. If an increased flow of blood is produced by the blister, it can only be by a larger supply from the aorta, through the common trunk of the two carotid arteries, which will of course equally supply the diseased inflammation within, and that excited by the blister outwardly."

So exceedingly ingenious and plausible does this explanation appear, that we could hardly refuse to admit its correctness, if a very enlarged experience did not abundantly establish the contrary practice. But the great advantage which in numerous cases, most unequivocally, has resulted from blisters thus applied, and the testimony in vindication of the measure, is so respectable that we are sufficiently warranted in urging

* Quinov.

their employment in the case before us. In most instances indeed, it will be necessary to shave the blisters, and to dress them with some irritating substance, as the same stimulating sentiments, with the view of keeping up a bloody discharge from the head. It must be confessed, at the same time, that in some cases, where blisters have been applied to the scalp, the disease did terminate unfavourably. But this ought, by no means, to discourage us from their use; for the same fact equally applies to many of our most valuable remedies, and to abandon a mode of treatment, because it is not universally successful, would be an innovation in medicine, no less prejudicial to the science, than fatal to humanity.

Cold Applications. Among the means for lessening the plethora of the head, cold is doubtless entitled to considerable weight. Cloths, dipped in ice water, or vinegar, should be applied all over the head, and repeated as often as they become warm. Or, what answers very well, is a bladder of cold water, or a clay cap. During the application of cold, and even at all times, the head ought to be elevated; at least, as much as is agreeable

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to the patient; for in a case, attended with so much danger, it is prudent to avail ourselves of every advantage, however inconsiderable. By raising the head, and keeping it so, the determination to the brain will be obstructed by the effect of gravity, as well as the operation of the cold. We are also supported, in advising the use of this remedy, by the expressions of the patients themselves: for whenever they are in a situation to make known their feelings, they signify relief, and desire the remedy to be repeated.

Vesicatories and sinapisms. As corroborating means in the treatment of the first stage; vesicatories and sinapisms are, lastly, to be mentioned. These remedies, which are so important in febrile diseases where there is cephalic determination, would seem to be no less serviceable in hydrocephalus. They operate very much upon the same principle as blisters; and by equalizing the excitement of the system, they assuage the violence of the pain in the head, as well as other distressing symptoms dependant upon the congestion of the cerebral vessels.

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If unfortunately the disease has not been arrested by a diligent application of the (preceding) remedies, an effusion of serum, the natural consequence of inflammation, takes place within the brain, to which a dangerous train of symptoms soon succeeds, and serve to point out the commencement of the second stage. Such being the work, the intention of cure, is evidently, to excite the action of the absorbents, by which the water may be removed from the brain, and the mischievous effects of its continuance, thereby obviated.

With this view, there is no plan of treatment which promises more, or is likely better to succeed than a mercurial course. To obtain its effects as speedily as possible, the mercurial should be very liberally administered internally, and the most powerful ointment externally applied by means of frictions, with the greatest industry in large quantities. "To do less than this," says Dr Chapman, and certainly with great discernment, "in these desperate cases, is to trifle with the remedy, to practice injustice to ourselves, and to cut off the only chance which the patient has of salivation." Whether mercury operates

in these cases, by stimulating the absorbents to increased action, or by substituting its own specific agency in place of the diseased one, does not now clearly appear. It is sufficient for my present purpose to know however, that its utility in this stage of the disease, is incontestably confirmed, by the repeated experience of many practitioners. I am not ignorant, that the dangerous and even implacable effects, which occasionally follow the excessive use of the medicine has deterred some physicians from exhibiting it in efficient quantities; but when we reflect, that the disease has now advanced to a stage, in which the utmost danger is to be apprehended, and from which, indeed, recoveries very rarely take place, unless there ought to be no hesitation, or delay in the adoption, and vigorous application of such measures as experience, teaches us are most likely to prevent a fatal termination.

Simple mercury sometimes cures in persons the cure, and I think it is accordant to be preferred to the muriate by enhancing a remedy which also has been highly extolled in this stage of the complaint. At the accounts of

* Chaugne.

the writers on Hydrocephalus are to be confided in however, the foxglove has undoubtedly proved exceedingly serviceable in some instances, and whenever a suitable opportunity presents itself, in the course of the treatment, it seems proper to employ it. The medicine ought never to be resorted to, while the pulse continues to be much excited, or until the system is brought to a condition favourable to its use. Exhibited under these circumstances, the article appears to be entitled to some portion of our confidence, and sometimes displays effects, eminently beneficial and salutary. The proper mode of administering it, is to commence with a temperate dose, which is to be gradually increased, until its operation on some parts of the body is apparent.*

Having, by these combined means, subdued the disease, and the effusion also being removed from the brain, it will be advisable, in the next place, to have recourse to a tonic plan of treatment; during which course a very particular attention should be directed to the bowels, and if any tenacious to costiveness exists, it ought to be most carefully corrected. By these measures, together

with the prudent use of moderate exercise, the recuperative energies of the system, will be considerably assisted, and the convalescence of the patient, more speedily and effectually established.

It now becomes my duty, most affectionately, to offer my thanks, to the Medical Professors of this University, for the instruction I have received from their excellent lectures; as well as to express the great satisfaction, with which their impressive eloquence has stamped upon my mind, the most important medical truths. But in making these open expressions of gratitude, gentlemen, let it not be forgotten, that I thoroughly feel my impotency to do justice to your merits; and while sensible of the great obligations, which are due to your affection and kindness: I wish it to be remembered, that a source of the most sensible gratification, is opened to my mind, when I contemplate, that the elements of my medical education, have been imbibed from the illustrious Archiaters of the Western Hemisphere.

The End.